CLAIMS

What is claimed is

1. In a network having a master device and a plurality of slave devices in network communication to said master device, a Medium Access Control layer protocol for transmission and reception of network packets comprising a Time Division Multiple Access frame definition, said frame definition having a start-of-frame section, a command section, and a data slot section containing a plurality of variable-length data slots.

2. The Medium Access Control layer protocol as recited in claim 1, wherein said protocol further implements Quality of Service to OSI layers above said Medium Access Control layer.

3. The Medium Access Control layer protocol as recited in claim 1, wherein said protocol further implements dynamic requisition of variable-length data slots within said frame.

4. The Medium Access Control layer protocol as recited in claim 1, wherein said protocol further implements dynamic allocation of said variable-length data slots.

5. The Medium Access Control layer protocol as recited in claim 4, wherein said protocol further implements dynamic reallocation of said variable-length data slots.

6. The Medium Access Control layer protocol as recited in claim 1, wherein said variable-length data slots of said frame have a granularity of one bit.

7. In a network system having a master device and a plurality of slave devices in network communication to said master device, a frame definition for use in Medium Access Control layer protocol transmission comprising a Time Division Multiple Access frame, said frame definition comprising a start-of-frame section, a command section, and a data slot section comprising a plurality of variable-length data slots.

8. The frame definition as recited in claim 7, wherein said protocol further implements dynamic assignment of said variable-length data slots.

9. The frame definition as recited in claim 8, wherein said protocol further implements dynamic reallocation of said variable-length data slots.

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10. In a network system having a master device and a plurality of slave devices in network communication with said master device, said network system employing a Time Division Multiple Access frame comprising a master sync section, a command section and a data slot section having a plurality of

variable-length data slots, a method for assigning said variable-length data slots comprising the steps of:

(a) periodically transmitting an ALOHA message to invite protocol messages by said master device;

(b) receiving a data link request with Quality of Service parameters by a source slave device from an OSI layer above said Medium Access Control layer, said Quality of Service parameters including a bandwidth range requirement for data transfer;

(c) transmitting a data link request by said source slave device to said master device in response to said aloha message, said data link request including said bandwidth range for data transfer and a target slave device for communication;

(d) receiving said data link request by said master device;

(e) determining the availability of said source slave device and said target slave device for communication;

(f) providing a data slot assignment by said master device to said source slave device and said target slave device, said data slot assignment having a start time for communication and a slot length having a bit length within said bandwidth range; and

(g) communicating said data slot assignment by said master device to said source slave device and said target slave device.

11. The method of claim 10, further comprising the step of reallocating current data slot assignments within said frame prior to the step of providing a data

slot assignment, wherein said step of reallocating said current data slot assignments comprises:

(a) iterating through each said current data slot assignment;

(b) determining whether each said current data slot assignment is to be reassigned a new slot start time;

(c) assigning a new slot start time to said current data slot assignments determined to be reassigned;

(d) determining whether each said current data slot assignment is to be reassigned a new slot length;

(e) assigning a new slot length to said current data slot assignments determined to be reassigned; and

(f) communicating said modified data slot assignment by said master device to said source slave device and said target slave device.

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